

The Determinants of Capital Structure: An Empirical Investigation of Malaysian Listed Government Linked Companies

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ABSTRACT: In this study, we explore how the debt equity choices of Listed Malaysian Government linked Companies (GLCs) are influenced by the firm specific characteristics and macroeconomic variables using a sample of 13 GLCs from 1997 to 2009. Two elements of leverage, book value of total debt ratio (BVTDR) and long term debt ratio (BVLTD), were used to check for any significant changes in corporate financing and found mixed results. Tangibility and firm size are the most significant variables to determine the corporate financing of GLCs. Liquidity and interest rate are negatively significant with BVTDR and BVLTD, respectively. The study concluded that profitability is inconsequential in determining corporate financing; inconsistent with the findings of previous Malaysian studies. With the proper design of capital structure and intervention from the government, the study also concludes that GLCs are rely less on leverage to support their investment activities.

Keywords: Capital structure; Pecking Order Theory; Trade-Off Theory

JEL Classifications: G32; F62

1. Introduction

Government Linked Companies (GLCs) are defined as government holding entities of which the government owns 20% or more of the shares in this case, the Malaysian government (Hamid, 2008). As a major shareholder of the GLCs, the Malaysian government delegates the responsibility to distribute government funds to the GLCs through the Federal Government Linked Companies (GLICs)¹ (see Appendix B of Table 9). These firms are different from many state owned firms in other countries. The formation of GLCs was initiated from the privatisation and corporatisation through the New Economic Policy (NEP) in the 5th Malaysia Plan, 1986-1990². In a broader perspective, the unique characteristics of the GLCs are apparently becoming attractive to investigate, especially in corporate financing. Porta et al. (1999) illustrate that the ultimate owners refer to five categories, including the following: (1) family or an individual; (2) the state; (3) the firm is owned by a large financial institution; (4) the firm is owned by a large corporation; and (5) miscellaneous or sundry

¹ Currently, there are six GLICs – i.e Ministry of Finance Ltd. (MOF), Employees Provident Fund (EPF), Permodalan Nasional Bhd (PNB), Lembaga Tabung Angkatan Tentera (LTAT), Khazanah National and Lembaga Tabung Haji (LTH) (Lau and Tong, 2008).

² The New Economic Policy was launched for the period 1976 to 1990. The objective of NEP was to eradicate poverty and economy restructuring among the Bumiputera (indigenous group) and non- Bumiputera (Jomo and Sundaram, 2004). Privatization was carried out to eradicate poverty by increasing ownership among the Bumiputera in economics and help the government lessen its burden in providing services to the public. As noted, GLCs originated from many government departments, whereby they were initially privatized before being transformed completely into government owned companies in 1991(Leng et al., 2007).

(e.g., a co-operative, voting trust, or non-single dominant investor group). Also, a firm can be classified as an ultimately owned firm if a shareholder owns more than 20% of the shares due to effective voting rights (Paligorova and Xu, 2012; Porta et al., 1999; Pöyry and Maury, 2010). This is consistent with the description by Ang and Ding (2006) in their comparative study on the performance of government linked companies (GLCs) and non-GLCs in Singapore that GLCs are companies of which the state owns 20% or more shares. Huang and Song (2006) discover that Chinese state-controlled listed firms are designed to be profit-oriented and are required to serve the country's economic welfare. The study was carried out by comparing these firms against companies in other countries and it was concluded that these firms have lower leverage because the bond market is relatively small and undeveloped. Based on that result, ownership structure, tangibility, size, and non-debt tax shield were found to be the determinants of capital structure in China. Deesomsak et al. (2004) examine the capital structure in emerging markets, i.e., Singapore, Malaysia and Thailand, and suggest that the legal framework and corporate governance practices may affect the choice of capital structure for such country.

However, there is a lack of literature discussing the determinants of capital structure of GLCs in Malaysia (Ting and Lean, 2011). As such, this study provides insight into the relationship of debt and equity constitution in GLCs. A massive literature discusses the different levels of debt and equity in different industries to explain the determinants of capital structure. However, much of the literature does not shed light on how the factors influence the debt ratio within an industry, especially in Malaysian GLCs. Therefore, this study has three objectives. First, the study is to identify the factors that determine the capital structure (i.e., firm specific characteristics and macroeconomic variables) of listed GLCs in Malaysia. Second, the industrial effect is added to investigate the significance of the different kinds of industry in determining the capital structure of GLCs. Third, attempts to identify how the different debt levels such as long term and total debt term ratio affect the capital structure determinants.

The paper is organized as follows: Section 2 reviews the capital structure theory. Section 3 discusses the literature review and hypotheses. Section 4 describes the data and research methodology. Section 5 discusses the research findings. Section 6 provides the conclusions.

2. Theory of Capital Structure

Historically, the theory of capital structure appeared in 1958, when Franco Modigliani and Merton Miller proposed the M&M irrelevance proposition. They assumed that, in a capital market with perfect information, no taxes and bankruptcy costs, the financial leverage of a firm is unrelated to its value. The theory rationalised that there is no effect on the value of a firm whether the firm is financed through issuing equity financing or debt, or a combination of the two. The reason is that if there are any changes in the debt to equity ratio, the firm's cash flow will remain unchanged. Also, they argued that all firms have equal opportunities to borrow at the same rate (Modigliani and Miller, 1958). The theory of capital structure can be classified into three well-known theories: the Pecking Order Theory (hereafter POT), Trade-Off Theory (TOT) and Agency Theory (AT). The structure of the POT focuses on internal financing, for instance, through retention of profits as the first priority, debt financing is a second priority when internal funds are insufficient, and equity financing will be issued as the last option to finance a firm's business. The theory implies that, as much as possible, firms must avoid equity financing because it is an indication to the market that the business needs external capital, thus inviting external parties to invest. As such, the POT model demonstrates a financial market imperfection, whereby the asymmetric information between managers and outside investors affects corporate financing decisions (Myers, 1984). By modelling an optimal capital structure, a firm has the option to employ the TOT. The theory indicates that debt financing has its benefits and accepts the idea of the presence of the bankruptcy cost of debt. In an effort to maximise a firm's value, such as to reduce tax deductions, the firm can consider the TOT model. In the event that the firm is unable to make a payment of interest, for instance, it may lead to the bankruptcy cost. As such, firms that intend to achieve a balance between internal and external financing should take advantage of the tax benefit of higher debt while employing measures to resist the possibility of financial distress (Drobotz and Fix, 2003).

In addition, the AT can be described as a contract between two parties, a manager, as the agent, and a shareholder, as the principal, whereby the manager carries out responsibilities to give

service to the shareholder (Jensen and Meckling, 1976). A conflict between the two parties is believed to happen when the value of a firm cannot be maximised because the managers possess certain discretion and different views from the shareholders. As acknowledged by Jensen (1986), the utilisation of debt as an internal control mechanism may be useful to lessen the agency cost problem when there is insufficient of cash flow. As seen above, the role of debt is very important in mitigating the agency problem³. Though a manager holds many responsibilities, such as providing the best service to shareholders, as well as managing the cash flow and assets carefully in order to avoid bankruptcy, the availability of debt acts as a device for the shareholders to monitor and evaluate managerial actions effectively. Chu and Cheah (2004) state that in Malaysia, the government exercises micro policy, presumably to regulate and protect the country. Concerning all firms in Malaysia, in the event of an agency conflict, it is quite challenging to resolve using it leverage because of the registered high leverage ratio compared with foreign firms.

3. Literature Review and Hypotheses

3.1 Capital structure (leverage)

Leverage can be defined in different ways. Leverage reflects a firm's method of financing. It measures the relative amount of leverage spending by the firm to finance its operation. Indirectly, it helps the investor to identify the riskiness of a firm. A higher level of leverage is considered a high risk. In particular, firms rely on high leverage for future development. Rajan & Zingales (1995) indicate that the choice of leverage depends on the purpose of the analysis. Previous studies have revealed that there are different approaches to measure leverage; including total liabilities to total assets, debt to equity and total long term liabilities to total assets. In empirical studies of the determinants of capital structure, leverage is expressed either in book or market value terms. This study used two approaches to measure leverage in book value terms. The book value of the long-term debt ratio (BVLTD) is a measure of long-term debt over total assets. Leverage is evaluated to show the capability of firm to pay its fixed interest commitments by its total assets. The book value of the total debt ratio (BVTDR) is total debt divided by total assets. Total debt is the sum of short and long-term debt that comprises all the interest bearing and capitalized lease obligations, whereas total assets are the sum of fixed and current assets. This is commonly used to measure leverage in empirical studies especially in emerging market (Suhaila et al., 2008).

3.2 Firm-specific characteristics

3.2.1 Tangibility

Tangibility can be used to represent asset structure of the firm. There is potential for a firm with more tangible assets to employ more debt since the assets can be used as collateral to reduce default risk. Since financial institutions constantly have imperfect information about a firm's performance, it is a common practice for tangible assets to be subjected to a pledge when the firm issues debt. Myers (1977) indicates that firms usually have the ability to hold a higher usage of debt through its fixed assets compared with intangible assets for its sustainable growth. Jensen and Meckling (1976) state that the tangible assets can be pledged as collateral when the value of those assets is high, to mitigate the agency cost of debt. Most empirical results found that there is a positive relationship between debt and tangible assets, whereby firms prefer to hold high leverage when the value of tangibles assets is high (Drobotz and Fix, 2003; Huang and Song, 2006; Ooi, 1999; Paligorova and Xu, 2012; Rajan and Zingales, 1995; Wiwattanakitang, 1999). These results support the TOT and AT. However, Ali Ahmed and Hisham (2009) reveal that TOT is not suitable to explain the issuance of new debt in the Malaysian capital market. Pandey (2001) and Psillaki and Daskalakis (2009) find a negative relationship between tangibility and leverage. They indicate that successful companies with excess financing will dampen further borrowing because of sufficient sources of income. Therefore, we hypothesize a positive relationship between leverage and tangibility. We use total fixed assets over total assets to assess the significant correlation between tangibility and leverage.

³ Debt is a tool to foresee the firm's future cash flow and capability of meeting its obligations. It is a signal to evaluate the manager's level of confidence in making corporate financing decision. If the manager issues equity more than debt, one can assume that management is afraid to forecast the firm's future outlook (Ross, 1977).

3.2.2 Firm size

The firm size greatly influences the availability of funds from different sources. Large firms are likely to be diversified and less prone to bankruptcy since a large company has greater flexibility in designing its capital structure (Rajan and Zingales, 1995). A large company can obtain loans on easy terms whereas small firms find it quite hard to raise long term loans (Titman and Wessels, 1988). It is quite common for small firms to depend on internal funds to survive, since the available funds for them are quite restricted. Accordingly, TOT predicts a positive correlation between size and leverage. Deesomsak et al. (2004) find that large firms have the potential to borrow more than smaller firms. Indeed, large firms have relatively low bankruptcy costs (Drobotz and Fix, 2003). This view implies that large firms have stable cash flows and can afford higher levels of leverage. On the other hand, Suhaila et al. (2008) find that there is an inverse relationship between firm size and leverage. The result suggests that large firms have less demand for leverage than small firms. As stated in the POT, size is subject to information asymmetry between the firms and capital markets. Large firms exhibit less information asymmetry because information about these firms is publicly available in the market place. Thus, these firms potentially can disseminate information to react to market sensitivity and are less dependent on debt. Therefore, we hypothesize a positive relationship between leverage and firm size. GLCs have easy access to funding since they are more diversified and profitable. Also, lenders are more willing to give them loans because they can meet their obligations in interest payments and have less exposure to financial distress. Previous studies measured firm size as a logarithm of net sales (Maghyreh, 2005; Ooi, 1999; Rajan and Zingales, 1995; Titman and Wessels, 1988; Wiwattanakantang, 1999). We use a natural logarithm of sales, since sales are expected to reflect the borrowing capacity of a firm.

3.2.3 Liquidity

The liquidity ratio is the ability of the firm to pay back its short-term obligations. A higher liquidity ratio shows that the firm has enough current assets to pay its current liabilities for its day-to-day operations. Most previous studies support the fact that high liquidity firms tend to borrow less for future growth in line with the POT. The POT suggests a negative relationship between liquidity and leverage because firms are able to use their current assets to finance their operation and thus there is no urgent need for external financing. Therefore, we expected a negative relationship between leverage and liquidity. We measure liquidity by current assets divided by current liabilities.

3.2.4 Profitability

Previous studies have different views on the relationship between leverage and profitability. Sayilgan et al. (2006) suggest a positive relationship that agrees with the TOT in that a profitable firm would require high debt as it has better borrowing power and loan payment capability. However, Rajan and Zingales (1995), Jöeveer (2005) and Paligorova and Xu (2012) find that a negative relationship between leverage and debt. This agrees with the POT assumption that firms generally follow a hierarchy in choosing their financing, starting with retained earnings as the first choice for their investment funds (Myers, 1984). They move on to bonds followed by new equity, but only if it is really necessary. When investigating Jordanian firms, Maghyreh (2005) finds a negative significantly correlated relationship between profitability and leverage. He elucidated that managers are reluctant to alter external financing and are more likely to use alternative financing since they have higher degree of information asymmetry over the creditor. These firms have maintained huge amounts of income, which lessens the need to source external financing. In addition, Jordanian firms have a desire to use internal financing because of the low protection over investors and creditors tends to limit access to external financing. Therefore, we expected to have a negative relationship between leverage and profitability in line with the POT. We use earnings before interest and taxes (EBIT) divided by total assets to measure the indicator of firm profitability.

3.3 Macroeconomic variables

3.3.1 Interest rate

Interest rate (INT) refers to the cost of borrowing for the firm. It is the rate offered by financial institutions, to be used as a benchmark to capture customer demand when acquiring loans from institutions. Firms use BLR as a barometer to compare the cheapest interest rate offered among

financial institutions⁴. Having an established financial position, i.e., better position to commit for the interest payment, will allow a firm to apply more debt because of the advantage of the low cost of borrowing. In contrast, when interest rates rise and to avoid any potential financial distress, firms will exercise their equity financing and avoid new debt. Ooi (1999) finds that the relationship between prevailing market interest rate and the debt ratio is significant negatively related. However, Hung et al. (2002) find that there is a significant positive relationship between leverage ratio and interest rate. Conversely, De Jong et al. (2008) show that the relationship between leverage ratio and interest rate is not significant. We expected a negative relationship between leverage and the interest rate since when the interest rate is high a firm is not likely to borrow more to reduce financial risk and financial distress. Since 1995, the Central Bank in Malaysia imposed the ceiling rate to BLR, but this was removed in 2004 to allow financial institutions to structure their own lending rate to their customer⁵. Therefore it is more practical for us to use average lending rate as a proxy of interest rate, in identifying the correlations between interest rate and financial leverage. This refers to the weighted average lending rates offered by commercial banks, finance companies and merchant banks to their customers in Malaysia.

3.3.2 Economic growth

Recent literature revealed that positive relation between debt and GDP growth (Hanousek and Shamsur, 2011; Camara, 2012) while (Gajurel, 2006; Bastos, 2009; Bokpin, 2006) find contrary results. Mokhova and Zinecker (2014) include GDP growth as variable, but find mixed results. In their study, GDP growth has a weak insignificant relationship with different proxies of capital structure on European countries except Greece that reported significant positive influence on the short term debt ratio.

De Jong et al. (2008) highlight that higher economy growth would be a sign that a country has stable economic conditions and good prospects of economic development. Therefore, they believed that firms would tend to employ more debt. On the other hand, when a country faces an economic downturn, the country is facing high economic volatility. As a result, investors' sentiments will dampen. Hence, the study measures economic growth by using percentage changes in GDP as a proxy for economic growth. This is a measure to capture the economic activity of a country. Thus, we expect to have a positive relationship between leverage and economic growth.

3.4 Industry effect

An industry effect is one factor included in the model. The variable is being used to detect the impact of different industries in modelling firms' capital structure. Suto (2003) highlights that different industries have different capital structures because every industry sector requires different liquidity and fixed investment. In addition, some industries may face a higher bankruptcy and financial costs and others may not (Mahmud and Qayyum, 2003). Therefore, the study introduced four industry dummy variables to control the industry effect on capital structure among the Malaysian Listed GLCs. The dummy variables are "1" for consumer products, construction, plantations and trading, and services, and zero ("0") for industrial products.

4. Research Methodology

4.1 Data

The analysis covers Malaysian GLCs listed on the Bursa Malaysia, which includes the different industries of the economy (plantations, property, construction, consumer products, technology, and trading and services). The sample data are restricted to Malaysian GLCs listed on the Bursa Malaysia⁶. Overall, 33 GLCs were identified starting from 1997, which covers the beginning of the Asian Crisis, and ending in 2009. However, after considering all constraints, the final sample was reduced to 13

⁴ Most of firms in Malaysia prefer to use bank loans as source of borrowing since 90% of borrowings come from floating- interest rate (Nagano, 2003). In addition, he found that there is a close relationship between large Malaysian firms and the financial institutions. Consequently, it leads to have less information asymmetry between the firms and investors.

⁵ See website Central Bank of Malaysia. *BNM Introduces New Interest Rate Framework*. Available from: <http://www.bnm.gov.my/index.php?ch=8&pg=14&ac=83>.

⁶ GLCs can be in categories, with unique characteristics. See the website <http://www.pcg.gov.my> for the listed Malaysian GLCs.

firms⁷. This led to 169 total observations. Six of the 33 identified GLCs are banks and financial institutions and were excluded from the sample of the study because these firms are highly regulated and have a different operational structure. The sample must not involve companies in any type of mergers, demergers and restructuring during the sample period because that will distort the true picture of the capital structure of the company. The proxies can be seen in Table 1.

Table 1. Proxies for Dependent and Independent Variables

Variables	Proxies
Dependent Variables^a	
Debt ratio	Total debt/Total Assets
Long term ratio	Long term debt/Total Assets
Independent Variables	
Tangibility (Tang)	Total fixed assets divided by total assets
Profitability (PRF)	Earnings before interest and taxes (EBIT) divided by total assets.
Firm size (SZE)	Natural logarithm of sales
Liquidity ratio (LIQ)	Currents assets divided by current liabilities
Interest rate (INT)	Average lending rate
Economic growth rate (EGRW)	Changes in GDP
Industry effect	The dummy variables are “1” for consumer products, construction, plantations, trading and services, and zero (“0”) for industrial products. The abbreviations for the industry dummy variables are: construction, plantation, trading and services and consumer products.

Note: ^a The leverage ratios are calculated in book value terms.

The study adopted pooling regression to test for the significant impact of firm specific and macroeconomic variables on corporate leverage. The research was conducted using four models to examine the determinants of capital structure towards the formulation of explanatory factors to meet the research objective. In the first two models (i.e., Models 1 and 2), the analysis deals with the book value of the long-term debt ratio (BVLTD) without and with the dummy, respectively. Models 3 and 4 are of the book value of total debt ratio (BVTDR) without and with the dummy, respectively.

The basic equation OLS multiple regression analysis models are as follows:

$$\text{Leverage} = \alpha + \beta_1 (\text{TANG}) + \beta_2 (\text{SZE}) + \beta_3 (\text{LIQ}) + \beta_4 (\text{PRF}) + \beta_5 (\text{INT}) + \beta_6 (\text{EGRW}) + \beta_7 (\text{CONSDUM}) + \beta_8 (\text{TRADSERDUM}) + \beta_9 (\text{PLANTDUM}) + \beta_{10} (\text{CONSTDUM}) + \varepsilon$$

The hypothesis is designed to test whether firm specific characteristics and macroeconomic variables significantly affect the capital structure of the firms. It was developed to cater for the pooling regression model. The hypotheses are:

H: There is a significant relationship between leverage and the independent variables. The independent variables are:

- a. Tangibility
- b. Firm size
- c. Liquidity
- d. Profitability
- e. Interest rate
- f. Economic growth
- g. Industry dummy variables

Leverage is measured by the book value of the total debt ratio and long term debt ratio as dependent variables. Statistically, the test hypothesis can be developed into:

The null hypothesis : Ho: $\beta = 0$

The alternative hypothesis: H1: $\beta \neq 0$, ($\beta = 1, 2, 3, 4, 5, 6, 7$, respectively)

If β is either positive or negative and statistically significant at the 95% confidence level, one can be fairly certain that there is a relationship between each of the independent variables and the capital structure of a company.

⁷ See Table 8 in the Appendix A.

5. Empirical Findings

5.1 Descriptive statistics

The descriptive statistics' of the variables are presented in Table 2. The table presents mean, median, standard deviation, minimum and maximum value of leverage and firm-specific and macroeconomic variables from the 169 observations in the sample of 13 firms. All variables in the table appear to demonstrate reasonable values. As stated earlier, leverage is defined as the total debt ratio (TDR) and long term debt ratio (LTDR) in book value (BV) terms. The table shows that the mean of BVTDR is 0.3034 and the standard deviation is 0.2212. The result for BVLTDTR is slightly smaller; the mean is 0.1967618 and the standard deviation is 0.19674170. The overall findings for the independent variables indicated by TANG, PRF, SZE, LIQ, INT, EGRW have means of 0.4640, 0.0619, 14.7157, 1.2525 7.3085 and 0.0805, respectively.

Table 2. The description and summary statistics of the regression variables

Variables	Minimum	Maximum	Mean	Std. Deviation
Firm size	11.7289	17.1754	14.7157	1.3991
Profitability	-0.3912	0.7234	0.0619	0.0997
Liquidity	0.10	8.38	1.2525	1.1524
Interest rate	5.08	12.13	7.3085	1.9474
Economic growth	-0.0870	0.1850	0.0805	0.0706
Trading and services dummy	0	1	0.54	0.500
Consumer dummy	0	1	0.15	0.362
Plantation dummy	0	1	0.08	0.267
Construction dummy	0	1	0.08	0.267
Book value total debt ratio	0.00	1.1839	0.3034	0.2212
Book value long term debt ratio	0.00	1.1834	0.1967	0.1967

5.2 Pearson correlation coefficient

The Pearson correlation coefficients are reported in Appendix Tables 10 and 11. Statistically, the results are used to detect the degree of significant relationship between two variables while controlling the effect of other variables. In relation to both leverage ratios and the explanatory variables, the results are similar. As predicted, tangibility has a strong positive relationship with both leverage ratios whereas firm size, profitability and liquidity have a significant negative relationship. The result for tangibility can be interpreted as consistent evidence with the TOT and AT, whereby higher tangibility may indicate the probability of a firm employing more debt is higher. Moreover, a firm can afford to acquire debt with low agency cost. The negative relationship between firm size, liquidity and profitability with both leverages implies that well established and profitable firms seem to employ less debt because they are more diversified with lower expectations of financial distress and bankruptcy costs. They are more likely to use internal financing rather than external financing as stated in POT. Tangibility and firm size have a significant positive relationship, which implies that the bigger the firm, the more likely it is to employ more assets. This result supports the relationship between tangibility and interest rate. Appendix C of Table 10 shows that tangibility has a significant relationship with interest rate. As such, a firm with more tangible assets has the advantage of borrowing or issuing debt, given that the tangible assets act as a pledge for the loan. In addition, interest rate has a strong negative relationship with size and profitability, showing that a firm with higher profitability will borrow less, because of the tendency to enlarge the firm. Economic growth has an insignificant correlation with the other explanatory variable.

5.3 Results

5.3.1 Analysis of variance

Discussion of the findings is based on a comparison with the previous study on capital structure. In this part, we explain the analysis of the variance results shown in Table 3, which presents the comparable ANOVA results for each model. Table 3 presents the effect of the firm characteristics and macroeconomic variables on both forms of leverage. The regression analysis signifies the results are highly significant and one can reject the null hypothesis at less than the 1% significance level. The

adjusted R² shows different results from a low of 23.6% for Model 1⁸ to a high of 41% for Model 4. The results are consistent with previous Malaysian studies (i.e. 18%-28% in De Jong et al. (2008), 27% to 56% in Mahmud and Qayyum (2003); 20.17% to 35.41% in Mohd Nazam (2006), and 28% to 49.2% in Suhaila et al.(2008)) and show among the highest adjusted R² values. Surprisingly, the adjusted R² improves when the model includes the industry dummy variables to see the effect of industry in determining leverage⁹. An interesting message here is that capital structure responds to the industry effect. In addition, the adjusted R² are above expectations despite the limited number of observation in the sample. Multiple regression analysis describes the effect of six explanatory variables acting jointly on the determinants of capital structure of GLCs. In fact, all models are statistically significant as indicate by the F-probability at 0.000 the significance level.

Table 3. Model Summary and ANOVA

Model	Adjusted R Square	F-statistics	F-prob
Model 1	0.236	9.651	0.000
Model 2	0.371	9.305	0.000
Model 3	0.351	16.124	0.000
Model 4	0.410	12.670	0.000

5.3.2 Evolution of debt ratios in Malaysia, 1997 to 2009

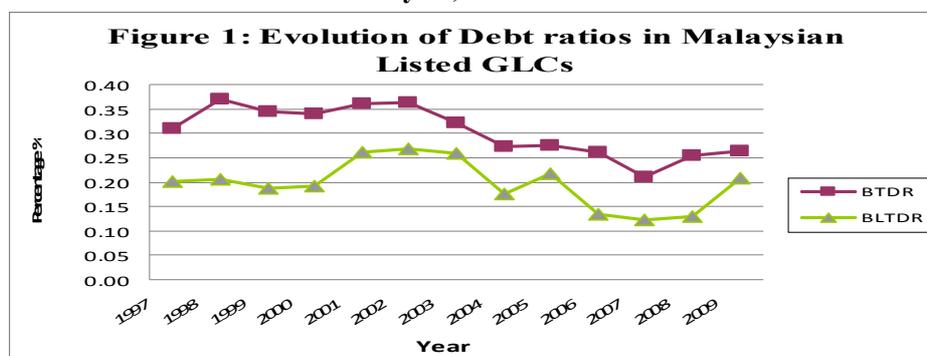


Figure 1 presents the evolution of debt ratios in Malaysia Listed GLCs over 13 years sample period, in terms of the two components of debt ratios: BVLTDTR and BVTDR. On average, the total leverage employed by GLCs is not more than 40% as shown by both leverage ratios. In fact, both leverage ratios display that leverage is a downtrend as indicated by the graph. BVTDR shows a highest average of about 37% total leverage in 1998, and decreases to 10% in 2004 before rising back to 26% in 2009. The BVLTDTR average increases to 26% in 2001 and 27% in 2002, with a drop of 13.3% in 2006 and 12% in 2007, but increases again to 21% in 2009. Collectively, it can be concluded that GLCs do not employ higher debt to finance their operations. This raises question why do GLCs have low leverage ratios? One reason is that the issuance of debt is used as an option to raise funds only if direct financial assistance from the injection equity funds from government and retained earnings are insufficient for expansion and growth. Undeniably, the government provides these firms with grants and the government budget to implement several national infrastructure projects. At present, the government has introduced project financing incentives (PFI) for large scale projects that will indirectly help firms to mitigate the risk in undertaking national projects and assist them to cover the capital cost. In addition, the difference in means between BVTDR and BVLTDTR at 11% indicates that these firms utilize short term financing rather than long term financing for their operations as indicated by Table 2. Besides, GLCs prefer equity financing rather than debt financing because the bond market in Malaysia is dominated by GLCs; the market is small and undeveloped. Another possible reason would be that Malaysian firms are considered risk averse and conservative in

⁸ E.g. 23.6% of Adjusted R² value indicating that 23.6% of the variation in leverage can be accounted by six explanatory variables in Model 1.

⁹Adjusted R² increases from 23% to 33.6% for the long-term debt ratio and from 35.1% to 41% for the total debt ratio. The result is consistent with (Wiwattanakantang, 1999).

designing their capital structure¹⁰. Despite the impact of the Asian Crisis in 1997 and the Global financial Crisis in 2008, the GLCs still have the capability to grow and sustain the growth without having to over-depend on the leverage. Therefore, GLCs in Malaysia are stable, maintain large portion of earning, and less exposure with the financial distress for future growth.

5.3.3 Factors affecting leverage ratio of GLCs

Tables 4 to 7 present the regression results including all six explanatory and dummy variables according to the model specification.

Tangibility: The result shows that asset structure (tangibility) is important in determining capital structure in Malaysia. As per the hypothesis, tangibility has a highly significant positive relationship with both leverage ratios in all models. Hence, hypothesis 1 is accepted. Most findings from previous studies point out that tangibility has a positive significant relationship with the leverage ratio (De Jong et al., 2008; Jõeveer, 2005; Rajan and Zingales, 1995; Sayilgan et al., 2006; Suto, 2003; Wiwattanakantang, 1999). The positive correlation is consistent with the TOT where a large asset structure leads firms to issue more debt to take advantage of tax exemptions. Hence, the results support the fact that tangible assets have an impact on corporate financing decision making. These firms tend to use tangible assets as collateral to raise debt financing, i.e., such assets have an impact on the borrowing decisions of a firm. For instance, in the case of bankruptcy, tangible assets create greater value than intangible assets.

Firm size: The results reveal that firm size is negatively correlated with both leverage ratios in all models. The coefficients are highly significant at 1% significant level for all models. This is inconsistent with hypothesis 2. The negative relationship supports the POT that larger firms tend to borrow less since such firms have already reached their mature stage, it is easier to obtain loans, and they have stable cash flows and have sufficient funding to support their next project. The results are also consistent with the previous research (Deesomsak et al., 2004) on Singaporean GLCs, suggesting that as long as there is the government support behind the company, they will not be exposed to financial distress, regardless of how big the firm is. Another possible explanation would be, these firms may already maintain a large portion of earnings that can provide them with more internally generated funds, thus discouraging them from turning to external financing. Because of that, most previous researchers suggest that stable companies do not require the extra leverage.

Liquidity: The results show that the liquidity ratio also has a negative correlation with leverage in all models. Although only two of four models are highly significant (at 1% significance level) as found for the total debt ratio, it is consistent with the POT assumption that high liquidity firms like to hold short term debt. Our result agrees with the findings of Mohd Nazam (2006) and Suhaila et al. (2008). Thus, the result shows that hypothesis 3 is accepted for Models 3 and 4 but rejected for Models 1 and 2. The empirical results envisaged that these firms would make use of their short term assets to cover their short term debt and depend less on long term debt. Thus, these firms tend to borrow less. Notably, it may be suggested that money-making firms tend to rely on internal financing, so that the liquidity of the assets becomes much stronger.

Profitability: The impact of profitability seems to be less important in determining debt ratios in GLCs; the results are mixed. The results are not significant in determining leverage in GLCs except for Model 3. However, it appears as a weak relationship at the 10% significance level, where one fails to accept or reject hypothesis 4. The findings are inconsistent with previous Malaysian studies (Mahmud and Qayyum, 2003; Mohd Nazam, 2006). From the above evidence, it is apparent that profitability is not a turning point for corporate strategy decisions. It could be argued that these companies are more oriented towards the provision of services as opposed to being a profit-making body. Thus, the results are aligned with the objective of the GLC itself. As such, the findings provide imperative indication of the effectiveness of the government ownership structure in creating firm value. The argument stated here agrees with earlier findings (Deesomsak et al., 2004) concerning the capital structure of state controlled firms in Singapore that are unaffected by profitability. As predicted, the negative relationship between profitability and leverage is consistent with previous

¹⁰ Kester and Isa (1994) state that corporate financing in Malaysia is quite different compared with developed countries like the US. They proposed that the management prefers to use internal financing as first choice, equity financing as second option and finally used debt financing as a last resort. This kind of financing hierarchy is different and opposed to the POT assumptions.

study (Ting and Lean, 2011) and supports the POT proposed by Myers (1984). The findings envisage that these firms tend to use internal financing for further investment and reduce their debt obligation.

Table 4. Model 1 of book value long term debt ratio (BVLTR)

<u>Variables</u>	<u>Sign</u>	<u>Coefficient</u>	<u>T-stats</u>	<u>P-value</u>	<u>VIF</u>
Constant		1.343	4.843	0.000	
Tangibility	+	0.376	-1.324	0.000***	1.206
Firm size	-	-0.043	-4.115	0.000***	1.190
Liquidity	-	-0.016	0.349	0.187	1.106
Profitability	-	-0.154	-1.121	0.264	1.066
Interest rate	+/-	0.14	-1.960	0.052*	1.122
Economic growth	+	-0.261	-1.384	0.168	1.012

Table 5. Model 2 of book value long term debt ratio (BVLTR) in different industries

<u>Variables</u>	<u>Sign</u>	<u>Coefficient</u>	<u>T-statistic</u>	<u>P-value</u>	<u>VIF</u>
Constant		0.693	3.960	0.000	
Tangibility	+	0.422	6.906	0.000***	1.665
Firm size	-	-0.045	-3.864	0.000***	1.746
Liquidity	-	-0.008	-0.633	0.527	1.273
Profitability	-	-0.032	-0.247	0.806	1.118
Interest rate	+/-	-0.014	-1.988	0.049**	1.152
Economic growth	+	-0.261	-1.477	0.142	1.012
Trading and services dummy		0.146	3.559	0.000***	2.740
Consumer dummy		0.073	1.315	0.191	2.654
Plantation dummy		0.006	0.096	0.924	1.668
Construction dummy		0.217	3.590	0.000***	1.692

Table 6. Model 3 of book value total debt ratio (BVTDR)

<u>Variables</u>	<u>sign</u>	<u>Coefficient</u>	<u>T-statistic</u>	<u>P-value</u>	<u>VIF</u>
Constant		1.511	8.793	0.000	
Tangibility	+	0.286	4.964	0.000***	1.206
Firm size	-	-0.080	-7.458	0.000***	1.190
Liquidity	-	-0.056	-4.451	0.000***	1.106
Profitability	-	-0.262	-1.839	0.068*	1.066
Interest rate	+/-	-0.009	-1.168	0.245	1.122
Economic growth	+	-0.165	-0.840	0.402	1.012

Table 7. Model 4 of book value total debt ratio (BVTDR) in different industries

<u>Variables</u>	<u>sign</u>	<u>Coefficient</u>	<u>T-statistic</u>	<u>P-value</u>	<u>VIF</u>
Constant		1.343	7.268	0.000	
Tangibility	+	0.313	4.843	0.000***	1.665
Firm size	-	-0.079	-6.395	0.000***	1.746
Liquidity	-	-0.043	-3.315	0.001***	1.273
Profitability	-	-0.160	-1.149	0.252	1.118
Interest rate	+/-	-0.007	-0.957	0.340	1.152
Economic growth	+	-0.158	-0.846	0.399	1.012
Trading and services dummy		0.147	3.396	0.001***	2.740
Consumer dummy		0.039	0.658	0.512	2.654
Plantation dummy		0.105	1.650	0.101	1.668
Construction dummy		0.188	2.945	0.004***	1.692

Note: The significance level is: *** significant at 1% level, ** significant at 5% level and * significant at 10% level.

Interest Rate: As shown, the relationship between interest rate and leverage ratios revealed mixed results. We find that the relationship for the total debt ratio is not significant. The findings parallel those of De Jong et al. (2008) that GLCs disregard the cost of borrowing when making debt equity decisions. In contrast, the results are almost identical for the long-term debt ratio, i.e., the p-values were 0.052 and 0.049 for Models 1 and 2, respectively. Therefore, the regression analysis results corroborate the relationship between interest rate and BLTR at 10% and 5% significance level in Models 1 and 2. Thus, one is able to accept hypothesis 5 for the book value long term debt ratio

(BLTDR) measurement but not for the total debt ratio (BVTDR). We ascertain that the coefficients are negatively correlated with leverage level in all models. One possible explanation could be the nature of the Malaysian capital market. As stated in some literature, the characteristic of the Malaysian capital market is unique and highly regulated.¹¹ Firms are considered too conservative, risk averse and apparently, as documented by Mahmud and Qayyum (2003), too interested in managing their capital structure.

Economic growth: We do not find any significant relationship between economic growth and debt ratio. Thus, economic growth does not directly play an important role in making financial decisions. As a result, hypothesis 6 is rejected.

Industry Dummy Variables: The study reveals that the leverage ratios have a significant relationship with the type of industry. Tables 5 and 7 show that trading and services and construction are significant at the 1% level. However, there is no significant relationship between the leverage ratios and consumer products and plantations. Thus, we do not reject hypothesis 7 for trading and services and construction industries but reject it for the consumer products and plantation industry.

6. Conclusions

This study investigated the determinants of capital structure of listed Malaysia GLC firms for a period of 13 years from 1997 to 2009. We examined three objectives to determine the significant relationships between leverage and the explanatory variables (i.e., firm and macroeconomic variables). We discuss four models for the research objectives based on two different levels of leverage (i.e., BVLTD and BVTDR). We find that determinants of capital structure differ between the two leverage measurements. We find that tangibility, firm size, liquidity, interest rate and industry affect the capital structure of GLCs. However, profitability and economic growth are not important in determining the corporate financing of GLCs. The empirical evidence specifically shows that tangibility and firm size are the two major significant variables in debt equity choices in GLCs. We find that the coefficients of all variables with both leverage ratios are parallel as suggested by previous study. The result shows that there is a negative relationship between both leverage ratios and firm size, profitability, liquidity economic growth and interest rate. On the other hand, tangibility is positively correlated with both the leverage ratios.

We also find that GLCs demonstrate capabilities in pooling national resources since 60% of their financing comes from internal financing (equity). This shows that the companies can take advantage of economies of scale, penetrate the domestic and foreign markets and also the emerging markets without issuing more debt. These firms face fewer obstacles in issuing debt and are less resistant during the financial distress. Statistically, we find that firm characteristic variables such as tangibility and firm size have significant correlations with both leverage ratios whereas liquidity is significant only with BVTDR. Interest rate also has a significant relationship with the BVLTD. Profitability is not statistically significant in determining the capital structure of GLCs except for Model 3 which displayed a weak significant relationship with BTDR. Thus, it can be concluded that profitability is not an important variable that one should include in determining the capital structure of GLCs. This result is not consistent with the previous Malaysian studies. However, the results suggest that these firms strive to meet national objectives rather than maximize firm wealth. We suggest that different industries affect the debt policies in GLCs. The adjusted R^2 improves when industry dummy variables were introduced to the models' specifications. We assume that economic growth, however, does not play an important role in determining both leverage ratios because of an insignificant effect. With the proper design of the capital structure and intervention from the government, Malaysian GLCs can sustain growth and improve performance even during economic crisis, towards transforming Malaysia into a developed country by the year 2020.

The study has outlined several recommendations for further research. The study is restricted to listed GLCs in Malaysia. The study sample is relatively small because of several constraints. Thus, we suggest that more research should be done. Both the leverage ratios are measured by using book value and not the market value. So, it would be more interesting if the leverage measurement can be extended to market value. In addition, future research can be carried out with a comparative analysis of GLCs across countries. We also suggest examining more variables and industries to obtain more

¹¹ See Suto (2003)

robust results with respect to GLCs' capital structure. Increasing the number of observations in the samples in subsequent studies is likely to produce more comprehensive results. Also, research could investigate the relationship between the percentage ownership of the government and leverage. This will throw more light on our understanding of the debt equity choices in the ownership structure of GLCs.

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APPENDIX A

Table 8. List of the listed GLCs

No	Listed GLCs	Market capitalisation (RM)	Principal activities
1	Pos Malaysia Bhd	1192198	"Provide postal and the provision of related services".
2	Proton Holdings Bhd	867757	"Engaged in automotive, equipment, manufacturing & engineering, oil & gas, product & services".
3	Telekom Malaysia Bhd	10843110	"Establishment, maintenance, and provision of telecommunication services".
4	Time Engineering Bhd	329479	"Engaged in the information technology (IT) infrastructure service".
5	Faber Group Bhd	584432	"Engaged in the integrated facilities management and property solutions sectors".
6	Boustead Holdings Bhd	3153600	"Engaged in the plantations, heavy industries, property, finance & investment, trading and manufacturing & services."
7	Chemical Company of Malaysia Bhd	911881	"Engaged in the manufacturing, marketing and supply of fertilizers, chemicals and pharmaceuticals products and services."
8	Petronas Dagangan Bhd	7848287	"Engaged in the automotive, engineering & manufacturing in respects of motor vehicles and products".
9	Petronas Gas Bhd	19193700	"Engaged in a wide spectrum of value adding petroleum and its related activities".
10	Malaysia Airline System Bhd	4545332	"Engaged in the business of air transportation and the provision of related services".
11	Malaysian Resources Corporation Bhd	1243327	"Engaged in the property development and management activities".
12	UMW Holdings Bhd	7107657	"Engaged in automotive, equipment, manufacturing & engineering, oil & gas, product & services".
13	Tenaga Nasional Bhd	34782740	"Generating, Selling and Distribution electricity".
Sources: Putrajaya Committee on GLCs High Performance (PCG)'s website, annual report for each company and Datastream (2010).			

APPENDIX B

Table 9. Six GLICs and their mandated and strategies

GLICs	Current communicated mandates and strategies
Permodalan Nasional Berhad	“To enhance the economic wealth of the Bumiputera community in particular and to contribute towards the growth and prosperity of the nation for the benefit of all Malaysians. To promote share ownership in the corporate sector among the Bumiputera and to develop opportunities for suitable Bumiputera professionals to participate in the creation and management of wealth”.
Ministry of Finance	“Responsible for holding investments on behalf of the Government of Malaysia and to manage these investments in line with national interest”.
Khazanah Nasional Berhad	“To maximize shareholder value of investments and to shape selected strategic industries in Malaysia, nurturing their development and doing so with the objective of pursuing the nation’s long-term economic interests. Entrusted to explore strategic investment opportunities in new sectors and new geographies.”
Employees Provident Fund	“To provide retirement benefits to its members through efficient and reliable management of their savings. Also committed towards the nation’s socio-economic development through prudent investments.”
Lembaga Tabung Angkatan Tentera	“To provide retirement and other benefits to other ranks of the Armed Forces and to enable officers and mobilized members of the volunteer forces in the service to participate in a savings scheme. To offer retraining for the retiring and retired personnel of the Armed Forces of Malaysia.”
Lembaga Tabung Haji	“To enable Muslims to save gradually to support their expenditures during the pilgrimage. To enable Muslims to have active and effective participations in investment activities permissible in Islam through their savings. To protect, safeguard interests and ensure the welfare of pilgrims during pilgrimage by providing various facilities and services.”
Kumpulan Wang Amanah Pencen	“To assist the government to finance pension payments and other retirement’s benefits to Malaysian civil servants.”

Source: Catalysing GLC Transformation to Advance Malaysia’s Development. Reported by Putrajaya Committee on GLCs High Performance (2005p. 30).

APPENDIX C

Table 10. Correlation coefficient among variables with book value long term debt ratio (BVLTD)

Correlations		TANG	SZE	LIQ	PRF	INT	EGRW	LTDR
TANG	Pearson Correlation	1.000						
	Sig. (2-tailed)							
	N	169						
SZE	Pearson Correlation	.339**	1.000					
	Sig. (2-tailed)	.000						
	N	169	169					
LIQ	Pearson Correlation	-.153*	-.058	1.000				
	Sig. (2-tailed)	.047	.452					
	N	169	169	169				
PRF	Pearson Correlation	-.056	.099	.194*	1.000			
	Sig. (2-tailed)	.467	.200	.012				
	N	169	169	169	169			
INT	Pearson Correlation	.173*	-.115	-.216**	-.126	1.000		
	Sig. (2-tailed)	.025	.135	.005	.103			
	N	169	169	169	169	169		
EGRW	Pearson Correlation	-.014	.004	-.048	.058	-.060	1.000	
	Sig. (2-tailed)	.854	.960	.532	.457	.435		
	N	169	169	169	169	169	169	
LTDR	Pearson Correlation	.394**	-.119	-.133	-.142	.017	-.094	1.000
	Sig. (2-tailed)	.000	.122	.084	.065	.825	.226	
	N	169	169	169	169	169	169	169

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

Table 11. Correlation coefficient among variables with book value total debt ratio (BVTDR)

Correlations		TANG	SZE	LIQ	PRF	INT	EGRW	BTDR
TANG	Pearson Correlation	1.000						
	Sig. (2-tailed)							
	N	169						
SZE	Pearson Correlation	.339**	1.000					
	Sig. (2-tailed)	.000						
	N	169	169					
LIQ	Pearson Correlation	-.153*	-.058	1.000				
	Sig. (2-tailed)	.047	.452					
	N	169	169	169				
PRF	Pearson Correlation	-.056	.099	.194*	1.000			
	Sig. (2-tailed)	.467	.200	.012				
	N	169	169	169	169			
INT	Pearson Correlation	.173*	-.115	-.216**	-.126	1.000		
	Sig. (2-tailed)	.025	.135	.005	.103			
	N	169	169	169	169	169		
EGRW	Pearson Correlation	-.014	.004	-.048	.058	-.060	1.000	
	Sig. (2-tailed)	.854	.960	.532	.457	.435		
	N	169	169	169	169	169	169	
BTDR	Pearson Correlation	.206**	-.377**	-.317**	-.237**	.121	-.047	1.000
	Sig. (2-tailed)	.007	.000	.000	.002	.118	.540	
	N	169	169	169	169	169	169	169
**. Correlation is significant at the 0.01 level (2-tailed).								
*. Correlation is significant at the 0.05 level (2-tailed).								